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EXAMINER

VERDIER, CHRISTOPHER M

ART UNIT	PAPER NUMBER
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3745

DATE MAILED: 05/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/808,490

Applicant(s)

KREIS ET AL.

Examiner

Christopher Verdier

Art Unit

3745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3-25-04, 9-14-04.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-17 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9-14-04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Art Unit: 3745

Receipt and entry of Applicant's Preliminary Amendment dated March 25, 2004 is acknowledged.

Information Disclosure Statement

The information disclosure statement filed September 14, 2004 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of the IPER from PCT/IB02/03862. The information referred to therein has not been considered.

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It improperly attempts to claim priority under 35 USC 119(a)-(d) of PCT application PCT/IB02/03862. The priority claim for this application should have been made under 35 USC 120.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the fastening contour (claim 1, lines 4

Art Unit: 3745

and 6), the seal between the platform blade root vane root and a rotary flow machine component (claim 1, line 17), the platform and component when directly adjoining the platform (claim 1, line 24, claim 10, lines 3-4, claim 11, lines 3-4, claim 13, lines 3-4,), the brazed connection or soldered connection (claim 2, line 3), and the component of the rotary flow machine adjoining the platform including an intermediate piece comprising a distance piece or a heat insulation segment (claim 16) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The abstract of the disclosure is objected to because it includes the phrase "The invention is characterized in that" (lines 7-8) which is implied and should be deleted, and because in the last line, "(Fig. 1a)" should be deleted. Correction is required. See MPEP § 608.01(b).

The disclosure is objected to because of the following informalities: Appropriate correction is required.

On page 1, line 7, the reference to the preamble of claim 1 is objectionable and should be deleted.

Page 10, lines 12-15 state that the blade/vane roots 2, 3 protrude for fastening purposes into the rotor arrangement 1. It is unclear how vane roots, which are stationary, could protrude into the rotor, which is rotating.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

The sealing element being firmly connected to the at least one platform (claim 1, line 19).

The sealing element connected to the platform by a bonded connection (claim 2).

The sealing element and the platform forming a metallurgical combination (claim 3).

The sintered metal comprising a homogeneously baked combination of NiAl, FeAl, or CoAl (claim 6).

Art Unit: 3745

The plastic deformation of the sealing element taking place substantially laterally relative to the plane of the seal gap (claim 11).

The platforms or platform and the component when directly adjoining the platform having a contour protruding into one another, the sealing element positioned at least on a contour part facing toward the aerofoils. (claim 13).

At least one cooling duct (claim 14).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Amended claim 7 recites that the metal foam is at least one element selected from the group consisting of Ni, Co, Al, and combinations thereof. There is no antecedent basis for the underlined limitations in the original specification, and thus these are new matter.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 3745

Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1-17 are contradictory and the scope is unclear, because claim 1, lines 10-13 recite that the sealing element is positioned between at least two platforms of adjacent blade roots and vane roots, which positively recites that the sealing element is between the blade platforms and vane platforms, yet claim 1, line 14 recites that this occurs along a rotor blade row, and claim 1, line 15 recites that this occurs along a guide vane row, which are all contradictory. The use of the multiple "or" clauses (claim 1, line 14, claim 1, line 15, and claim 1, line 23) in combination with the above unclear phrase results in numerous permutations which renders the scope of the claims unclear. In claim 1, lines 15-16, it is unclear what "a blade root vane root" is, because this is two different elements that appear to be claimed as a single element. In claim 10, line 3, claim 11, line 3, and claim 13, line 3, use of the "or" clause is indefinite for the reasons above. In claim 16, lines 4-6, "an intermediate piece comprising a distance piece, or a heat insulation segment" is unclear because it adds additional permutations by use of the "or" clause.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 3745

Claims 1-5, 7-8, 10-12, and 16-17, as far as they are definite and understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Beeck 6,312,218. Note the seal arrangement for reducing seal gaps within a rotary flow machine, the seal arrangement comprising rotor blades 10, 11 and guide vanes 5, 6, arranged in at least one rotor blade row and at least one guide vane row, respectively, each row including fastening contours (the unnumbered rotor that receives the unnumbered rotor blade dovetail root, and the hooks of the casing 17 that receive the guide vane shroud portion 9), each rotor blade and guide vane having blade roots (the unnumbered blade dovetail) and vane roots (the guide vane shroud portion 9) which protrude within the rotor blade rows and guide vane rows, respectively, the blade roots and vane roots each having a respective platform (unnumbered and 7, respectively), a sealing element 3, 3' comprising a plastically deformable material (note that aluminide or nickel aluminide are plastically deformable to some degree because they are made of a metal combination which possesses a degree of plastic deformation) positioned between at least two platforms of adjacent blade roots along a rotor blade row and a guide vane row, the sealing element being firmly connected to at least one platform and having a thickness protruding from the surface of the at least one platform, the at least two adjacent platforms inherently enclosing a cold gap in a cold condition and a hot gap during operation of the rotary flow machine, due to thermal expansion during operation. The sealing element is connected to the platform by adhesive bonding or brazing. Concerning claim 3, which recites that the sealing element is applied to a platform as a layer material by a precipitation process, this is a product-by-process limitation. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product-by-process claim does not depend on its method of

Art Unit: 3745

production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). The sealing element and the platform inherently enter into a metallurgical combination. With regard to claim 4, the sealing element is configured and arranged as a layer material. With regard to claim 4, lines 3-4, which recite that the layer material is capable of being applied by flame spraying, galvanic precipitation, or by plating onto the platform, these are recitations of intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963). Beeck discloses that the material of the sealing elements is aluminide or nickel aluminide, which is capable of being applied by flame spraying, galvanic precipitation, or by plating onto the platform. The plastically deformable material is a sintered metal (column 2, lines 4-6). Note that although the metal foam recited in claim 7 and the porous metallic coating recited in claim 8 are not disclosed by Beeck, claim 5 upon which these claims depends recites that the plastically deformable material comprises sintered metal, a metal foam, or a porous metallic coating. Because Beeck discloses the limitation of the sealing element being a sintered metal as recited in claim 5, claims 7 and 8 are still rejected, because Beeck still meets the limitation in claim 5 of a sintered metal. The sealing element is configured and arranged so that

Art Unit: 3745

when a contact pressure present between two platforms is exceeded in the hot condition of the rotary flow machine, the sealing element inherently will plastically deform to form a minimum hot gap. An unnumbered seal gap is enclosed by both platforms, with the seal gap defining a plane, and the sealing element is configured and arranged so that the plastic deformation inherently takes place substantially laterally relative to the plane of the seal gap, because the abutting platforms move against one another, and will deform the sealing element laterally relative to the plane of the seal gap. The rotor blades and guide vanes each comprise an unnumbered airfoil, and the sealing element (see figure 3E) has a wedge-shaped dovetail portion including a thicker wedge end oriented to face towards the airfoils of the vanes. As seen in figure 4, the component of the rotary flow machine adjoining the platform includes an intermediate piece comprising a distance piece (the combustion chamber outlet 15). The rotary flow machine comprises an axial turbomachine.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

Art Unit: 3745

the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8, 10-12, and 16-17, as far as they are definite and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Beeck 6,312,218 in view of Beeck 6,499,943. Beeck 6,312,218 discloses a seal arrangement substantially as claimed, for reducing seal gaps within a rotary flow machine, the seal arrangement comprising rotor blades 10, 11 and guide vanes 5, 6, arranged in at least one rotor blade row and at least one guide vane row, respectively, each row including fastening contours (the unnumbered rotor that receives the unnumbered rotor blade dovetail root, and the hooks of the casing 17 that receive the guide vane shroud portion 9), each rotor blade and guide vane having blade roots (the unnumbered blade dovetail) and vane roots (the guide vane shroud portion 9) which protrude within the rotor blade rows and guide vane rows, respectively, the blade roots and vane roots each having a respective platform (unnumbered and 7, respectively), a sealing element 3, 3' positioned between at least two platforms of adjacent blade roots along a rotor blade row and a guide vane row, the sealing element being firmly connected to at least one platform and having a thickness protruding from the surface of the at least one platform, the at least two adjacent platforms inherently enclosing a cold gap in a cold condition and a hot gap during operation of the rotary flow machine, due to thermal expansion during operation. The sealing element is connected to the platform by adhesive bonding or brazing. The rotor blades and guide vanes each comprise an unnumbered airfoil, and the sealing element (see figure 3E) has a wedge-shaped dovetail portion including a

Art Unit: 3745

thicker wedge end oriented to face towards the airfoils of the vanes. As seen in figure 4, the component of the rotary flow machine adjoining the platform includes an intermediate piece comprising a distance piece (the combustion chamber outlet 15). The rotary flow machine comprises an axial turbomachine.

However, Beeck '218 does not explicitly disclose that the sealing element is plastically deformable (claim 1), does not disclose that the plastically deformable material comprises a porous metallic coating (claim 5), and does not disclose that the porous metallic coating comprises MCrAlY, with M being selected from Ni or Fe.

Beeck 6,499,943 shows a sealing element 2 for platforms 12 of turbine blades 1, with the sealing element being in the form of a plastically deformable material that is porous, with the porous metallic coating comprising MCrAlY, with M being selected from Ni or Fe, for the purpose of protecting the platforms against thermal and mechanical effects.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the sealing elements 3, 3' of Beeck '218 such that they are plastically deformable and comprise a porous metallic coating comprising MCrAlY, with M being selected from Ni or Fe, as taught by Beeck '943, for the purpose of protecting the platforms against thermal and mechanical effects. Although Beeck '943 only discloses that the sealing elements 2 are located between adjacent blade platforms 12, one of ordinary skill in the art would have recognized from the teachings of Beeck '943 that the plastically deformable material

Art Unit: 3745

is also applicable to the vane platforms, due to the similarity between blade and vane platforms. Concerning claim 3, which recites that the sealing element is applied to a platform as a layer material by a precipitation process, this is a product-by-process limitation. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product-by-process claim does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). The modified sealing element and the platform inherently enter into a metallurgical combination. With regard to claim 4, the modified sealing element is configured and arranged as a layer material. With regard to claim 4, lines 3-4, which recite that the layer material is capable of being applied by flame spraying, galvanic precipitation, or by plating onto the platform, these are recitations of intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963). Beeck '943 teaches that the material of the sealing elements is FeAl, NiAl, or CoAl, which is capable of being applied by flame spraying, galvanic precipitation, or by plating onto the platform. Note that although the sintered metal recited in claim 6 and the metal foam recited in claim 7 are not taught by Beeck '943, claim 5 upon which

Art Unit: 3745

these claims depends recites that the plastically deformable material comprises a porous metallic coating. Because Beeck '943 teaches the limitation of the sealing element being a porous metallic coating as recited in claim 5, claims 6 and 7 are still rejected, because Beeck '943 still teaches the limitation in claim 5 of a porous metallic coating. The modified sealing element is configured and arranged so that when a contact pressure present between two platforms is exceeded in the hot condition of the rotary flow machine, the sealing element inherently will plastically deform to form a minimum hot gap. An unnumbered seal gap is enclosed by both platforms, with the seal gap defining a plane, and the modified sealing element is configured and arranged so that the plastic deformation inherently takes place substantially laterally relative to the plane of the seal gap, because the abutting platforms move against one another, and will deform the sealing element laterally relative to the plane of the seal gap.

Claim 6, as far as it is definite and understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Beeck 6,312,218. Beeck discloses a seal arrangement substantially as claimed as set forth above, including a sintered metal combination of nickel aluminide. However, Beeck does not disclose that the sintered metal is homogeneously baked.

Official Notice is taken that nickel aluminides are conventionally homogeneously baked, for the purpose of ensuring uniform material properties of the nickel aluminide.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the sintered nickel aluminide sealing element of Beeck 6,312,218

Art Unit: 3745

such that it homogeneously baked, for the purpose of ensuring uniform material properties of the nickel aluminide.

Claim 9, as far as it is definite and understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Beeck 6,312,218. Beeck discloses a seal arrangement substantially as claimed as set forth above, including a cold gap and a hot gap, but does not disclose that the cold gap is much greater than the hot gap.

Official Notice is taken that turbine components including turbine blades having platforms and turbine vanes having platforms are conventionally made of materials such that the cold gap is much greater than the hot gap, for the purpose of reducing the gaps during operation, thus providing increased efficiency at operation.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the seal arrangement of Beeck 6,312,218 such that the cold gap is much greater than the hot gap, for the purpose of reducing the gaps during operation, thus providing increased efficiency at operation.

Claim 9 is also rejected under 35 U.S.C. 103(a) as being unpatentable over Beeck 6,312,218 and Beeck 6,499,943 as applied to claim 1 above. The modified seal arrangement of Beeck '218 shows all of the claimed subject matter, except for the cold gap being much greater than the hot gap.

Art Unit: 3745

Official Notice is taken that turbine components including turbine blades having platforms and turbine vanes having platforms are conventionally made of materials such that the cold gap is much greater than the hot gap, for the purpose of reducing the gaps during operation, thus providing increased efficiency at operation.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified seal arrangement of Beeck 6,312, 218 such that the cold gap is much greater than the hot gap, for the purpose of reducing the gaps during operation, thus providing increased efficiency at operation.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beeck 6,312,218 in view of Starkweather 5,167,485. Beeck discloses a seal arrangement substantially as claimed as set forth above, including a platform 7, but does not disclose at least one cooling duct opening from the platform in the region of the sealing element 3, 3'.

Starkweather shows a turbine vane 10, 12 having platforms 14 which have cooling ducts 38 opening from the platforms in the region of a sealing element 40, for the purpose of providing cooling for the sealing element.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the seal arrangement of Beeck '218 such that at least one cooling

Art Unit: 3745

duct opens from the platform in the region of the sealing element 3, 3', as taught by Starkweather, for the purpose of providing cooling for the sealing element.

Claim 14 is also rejected under 35 U.S.C. 103(a) as being unpatentable over Beeck 6,312,218 and Beeck 6,499,943 as applied to claim 1 above, and further in view of Starkweather 5,167,485. The modified seal arrangement of Beeck '218 shows all of the claimed subject matter except for at least one cooling duct opening from the platform in the region of the sealing element 3, 3'.

Starkweather shows a turbine vane 10, 12 having platforms 14 which have cooling ducts 38 opening from the platforms in the region of a sealing element 40, for the purpose of providing cooling for the sealing element.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified seal arrangement of Beeck '218 such that at least one cooling duct opens from the platform in the region of the sealing element 3, 3', as taught by Starkweather, for the purpose of providing cooling for the sealing element.

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Buxe is cited as the equivalent to German Patent 3,303,482 cited by Applicants.

Art Unit: 3745

Beckershoff is cited to show a sealing arrangement for intermediate blade pieces.

Allowable Subject Matter


Claims 13 and 15 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.V.
May 6, 2005


Christopher Verdier
Primary Examiner
Art Unit 3745